

REMARKS

By the present amendment, pending claims 1, 15-17 have been amended to respond to the matters raised by the Examiner under 35 USC §§102(b), 103(a) and 112, while claims 13 and 22-24 have been cancelled.

§112

In the Office Action of January 13, 2003, the Examiner noted several deficiencies with regard to section 112 in the language of claims 1-14, 15-17 and 21-24. Claims 1, 15-17 have been amended such that claims 1-12 and 15-17 particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Applicant has made the required changes indicated by both the current Office Action and the Office Action of April 24, 2002, and has made other changes. Further, applicant has cancelled claims 13, 14 and 21-24. Applicant therefore asserts that the claims are now in proper form.

§102

The Office Action of January 13, 2003, indicated that claims 13, 14 and 22-23 were rejected under 35 USC §102(b) as being anticipated by Ryu et al.

By the present Amendment, applicant has cancelled claims 13, 14 and 21-24. This rejection is now moot and withdrawal thereof is respectfully requested.

§103

In the Office Action of January 13, 2003, the Examiner rejected claims 1-24 under 35 USC §103(a) as unpatentable over Pajunen et al. ("Pajunen") U.S. Patent No. 4,915,959 in view of Ryu et al. ("Ryu").

By the present amendment, claims 13, 14 and 21-24 have been cancelled while claim 1 has been amended to specify that the maturation of beer requires maintaining unmaturing beer in contact with yeast for a sufficient amount of time to reduce diacetyl into acetoin.

The Examiner asserts that it would have been obvious to those with ordinary skill in the art to use the wood chips disclosed in Ryu in the process of Pajunen because the wood chips have long been known as yeast immobilization particles. Further, the Examiner asserts that as the type of wood used by Ryu is not

specified it would have been obvious to those with ordinary skill in the art to use any wood that would provide suitable immobilization surfaces. Finally, the Examiner asserts that it would have been obvious to those of ordinary skill in the art to pre-treat the chips by any well known means to sterilize wood chips so as to prevent contamination during use.

The article of Ryu et al. teaches the use of wooden chips for the immobilization of yeast in a tubular and multi-stage reactor during the production of ethyl alcohol. The purpose of the reactor is to enhance the rate of ethyl alcohol production.

A process for the production of ethyl alcohol and a process for the production of beer, and especially for the maturation of beer, are two completely different processes in which the process conditions and thus the purpose and behavior of the yeast during these processes differ from each other. In the fermentation process, the purpose of the yeast is to produce ethyl alcohol. The use of immobilized yeast during this main fermentation does not affect the taste or flavor of beer, but enhances the production of ethyl alcohol.

Conversely, during the claimed maturation process, the purpose of using immobilized yeast is to decrease the content of diacetyl and other carbonyl components in order to give the beer a mellow and homogenous taste and flavor.

Inasmuch as the purpose of the reactor in Ryu is to enhance the rate of ethyl alcohol production, Ryu does not disclose nor suggest that immobilized yeast can be used in a maturation process. Specifically Ryu does not disclose nor suggest that immobilized yeast can be used in a maturation process for decreasing the content of diacetyl or other carbonyl components in order to give the beer a more mellow and homogenous taste and flavor.

Pajunen et al. teaches the use of a DEAE-cellulose resin as a carrier for the immobilization of yeast during the maturation process. Significantly, Pajunen does not disclose nor suggest any other carrier material other than DEAE-cellulose resin.

There does not exist in either Pajunen or Ryu a suggestion to combine or modify the references in the manner suggested by the Examiner. Further, a combination of Ryu and Pajunen would not have been obvious to one of ordinary skill in the art. It was only after lengthy research that the applicant discovered that wooden chips are suitable for use as a carrier for the immobilization of yeast in the maturation of beer. While Ryu described the use of wooden chips as a carrier for the immobilization of yeast during the production of ethyl alcohol in 1982, the Pajunen application was not filed until 1988. It is apparent that the knowledge of using yeast immobilized on wooden chips during fermentation was available in the public domain for researchers at the time of Pajunen's application. However, the Pajunen patent gives no suggestion nor teaching of using any other carrier than DEAE-cellulose. In fact, a person of ordinary skill, upon reading the Pajunen reference, would be discouraged from using any other carrier other than DEAE-cellulose for a carrier in beer maturation using a bio-reactor as described by the applicant.

Applicant notes that the Examiner may not use the present patent application as a basis for the motivation to combine or modify the prior art to arrive at the claimed invention. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F2d 1572, 221 USPQ 929 (Fed. Cir. 1984); see also In re Dell Chemical Co., 837 F2d 469, 473, 5 USPQ2d, 1529, 1531 (Fed. Cir. 1988). In doing so, the Examiner would impermissibly use hindsight for a suggestion to modify and/or combine the cited references.

As noted above, Ryu deals with a different application than applicant's invention, namely of the production of ethyl alcohol. In describing their process, Ryu provides a reactor with dimensions considerably different from the dimensions of the reactor according to the present claims. Specifically, Ryu discloses a column the height of approximately 1.5 meters and a diameter of 5 centimeters. Comparatively, the applicant claims a column having a height of 2.5 to 10 meters and a diameter of 1.5 to 2.5 meters. Applicant additionally asserts that the reactor disclosed in the article of Ryu or a reactor built in accordance with the corresponding dimensions in

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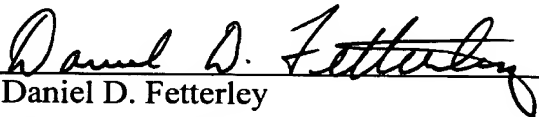
Ryu would not be suitable for industrial use in obtaining the maturation of beer in accordance with the method of the claimed invention.

In summary, applicant asserts that it would not be obvious to one of ordinary skill in the art to combine the references of Pajunen and Ryu to arrive at the current invention. Ryu discloses steps/elements that deal with a different problem than the claimed maturation of beer. Pajunen discloses only the use of DEAE-cellulose for a yeast carrier in a maturation process, not the claimed wood chips. Thus, there is no suggestion to combine the references. Therefore, withdrawal of the §103(a) rejection is respectfully requested.

For all the reasons advanced above, applicant respectfully submits that the application is in proper condition for allowance and that action is earnestly solicited.

Respectfully submitted,

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